



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
(Case No. 00-714-G)

In re Application of:

Chad A. Mirkin, et al.

Serial No.: 09/830,620

Filed: November 30, 1999

For: NANOPARTICLES WITH
POLYMER SHELLS

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Examiner: Robert D. Harlan

Group Art Unit: 1713

Confirmation No. 9430

Mail Stop PETITION
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

TRANSMITTAL LETTER

1. We are transmitting herewith the attached:

- a) Petition Under 37 CFR §1.181 To Withdraw Holding of Abandonment
- b) Exhibits A-C
- c) Return Receipt Postcard

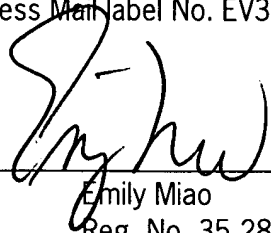
2. With respect to additional fees:

No additional fee is required.

3. GENERAL AUTHORIZATION: Please charge any additional fees or credit overpayment to Deposit Account No. 13-2490. A duplicate copy of this sheet is enclosed.

4. CERTIFICATE OF MAILING UNDER 37 CFR § 1.10: The undersigned hereby certifies that this Transmittal Letter and the paper, as described in paragraph 1 hereinabove, are being deposited with the United States Postal Service as "Express Mail Post Office to Addressee", addressed to the Mail Stop PETITION, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 on this 1 day of October, 2004 under the Express Mail Label No. EV331971193US.

Dated: Oct. 1, 2004

By: 
Emily Miao
Reg. No. 35,285



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
(Case No. 00-714-G)

Patent Application of:)
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Chad A. Mirkin, et al.)
) Examiner: Robert D. Harlan
Serial No.: 09/830,620)
) Group Art Unit: 1713
Filed: November 30, 1999)
) Confirmation No. 9430
For: NANOPARTICLES WITH POLYMER)
SHELLS)

**PETITION UNDER 37 CFR § 1.181 TO
WITHDRAW HOLDING OF ABANDONMENT**

Mail Stop Petition
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

This is a Petition under 37 CFR § 1.181 requesting withdrawal of a holding of abandonment of the above identified patent application. This Petition is being filed within 2 months of the mailing date of the Notice of Abandonment dated September 1, 2004, and is therefore not untimely filed. 37 CFR § 1.181(f). No petition fee is required.

This application was held to be abandoned by the U.S. Patent and Trademark Office (PTO) for Applicants' alleged failure to timely file a reply to the Office letter mailed on February 12, 2004. Applicants respectfully submit that a proper reply to the Office letter mailed on February 12, 2004 was timely filed, as shown by the evidence discussed below. Accordingly, withdrawal of the holding of abandonment is respectfully requested.

The following items provide evidence that the reply to the Office letter mailed on February 12, 2004 was timely filed and received by the PTO.

(a) True copies of the Transmittal Letter, and the Response to the Office Action dated February 12, 2004, which were included in Express Mail package

EV334697990US, are enclosed. (Exhibit A). The Transmittal Letter indicates that Response was mailed to the PTO on August 12, 2004, under 37 CFR § 1.10.

(b) A true copy of the Express Mail label, bearing tracking number EV334697990US, and indicating that the items enclosed in the package were mailed on August 12, 2004, is also enclosed. (Exhibit B).

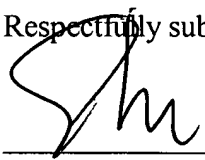
(c) A true copy of a return postcard bearing a PTO receipt stamp is also enclosed. (Exhibit C). The postcard indicates that the Response to the Office Action dated February 12, 2004 was received by the PTO and accorded a filing date of August 12, 2004. The postcard also indicates the tracking number of the Express Mail package containing the formal drawings as EV334697990US. The postcard is *prima facie* evidence of receipt of the Response to the Office Action dated February 12, 2004 by the PTO. See MPEP 503.

Applicants submit that items (a), (b), and (c) above provide sufficient evidence that the Response to the Office Action dated February 12, 2004 was timely filed and was received by the PTO. Accordingly, Applicants respectfully request withdrawal of the holding of abandonment of the instant application.

Entry of the Response to the Office Action dated February 12, 2004, which applicants timely submitted on August 12, 2004, is respectfully requested upon granting of the Petition.

Dated: Oct. 1, 2004

Respectfully submitted,



Emily Miao
Registration No. 35,285

McDonnell Boehnen Hulbert & Berghoff LLP
300 South Wacker Drive
Chicago, IL 60606
Telephone: (312)913-0001
Fax: (312) 913-0002

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
(Case No. 00-714-G)

In re Application of:)	
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Chad A. Mirkin, et al.)	Examiner: Robert D. Harlan
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Serial No.: 09/830,620)	Group Art Unit: 1713
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Filed: November 30, 1999)	Confirmation No. 9430
)	
For: NANOPARTICLES WITH)	
POLYMER SHELLS)	

COPY

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

TRANSMITTAL LETTER

1. We are transmitting herewith the attached:
 - a) Response to Office Action dated February 12, 2004
 - b) Appendix A
 - c) Copies of Information Disclosure Statement, Transmittal, 1449 Form, PTO stamped Return Receipt Postcard, Third Supp. IDS, Transmittal, 1449 Form, PTO stamped Return Receipt Postcard, Fifth Supp. IDS, Transmittal, 1449 Form, PTO stamped Return Receipt Postcard, Twelfth Supp. IDS, Transmittal, 1449 Form, PTO stamped Return Receipt Postcard, Thirteenth Supp. IDS, Transmittal, 1449 Form, PTO stamped Return Receipt Postcard
 - d) Petition for Three Month Extension of Time
 - e) Return Receipt Postcard

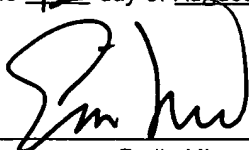
2. With respect to additional fees:

A check for \$475.00 is enclosed.

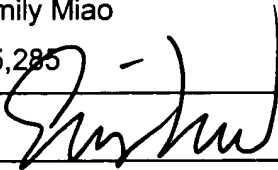
3. GENERAL AUTHORIZATION: Please charge any additional fees or credit overpayment to Deposit Account No. 13-2490. A duplicate copy of this sheet is enclosed.

4. CERTIFICATE OF MAILING UNDER 37 CFR § 1.10: The undersigned hereby certifies that this Transmittal Letter and the paper, as described in paragraph 1 hereinabove, are being deposited with the United States Postal Service as "Express Mail Post Office to Addressee", addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 on this 12 day of August, 2004 under the Express Mail label No. EV334697990US.

Dated: Aug. 12, 2004

By: 
Emily Miao
Reg. No. 35,285

COPY

PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)																
ADDRESS TO: Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450	Attorney Docket No.: 00-714-G Application No.: 09/830,620 USPTO Confirmation No.: 9430 Filing Date: 11/30/1999 First Named Inventor: Chad A. Mirkin Group Art Unit: 1713 Examiner: Robert D. Harlan															
<p>This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above identified application to and including <u>the Response to Office Action dated February 12, 2004.</u></p> <p>The requested extension and appropriate non-small-entity fee are as follows (check time period desired):</p> <table><tr><td><input type="checkbox"/></td><td>One Month (37 CFR 1.17(a)(1))</td><td>\$</td></tr><tr><td><input type="checkbox"/></td><td>Two Months (37 CFR 1.17(a)(2))</td><td>\$</td></tr><tr><td><input checked="" type="checkbox"/></td><td>Three Months (37 CFR 1.17(a)(3))</td><td>\$950.00</td></tr><tr><td><input type="checkbox"/></td><td>Four Months (37 CFR 1.17(a)(4))</td><td>\$</td></tr><tr><td><input type="checkbox"/></td><td>Five Months (37 CFR 1.17(a)(5))</td><td>\$</td></tr></table>		<input type="checkbox"/>	One Month (37 CFR 1.17(a)(1))	\$	<input type="checkbox"/>	Two Months (37 CFR 1.17(a)(2))	\$	<input checked="" type="checkbox"/>	Three Months (37 CFR 1.17(a)(3))	\$950.00	<input type="checkbox"/>	Four Months (37 CFR 1.17(a)(4))	\$	<input type="checkbox"/>	Five Months (37 CFR 1.17(a)(5))	\$
<input type="checkbox"/>	One Month (37 CFR 1.17(a)(1))	\$														
<input type="checkbox"/>	Two Months (37 CFR 1.17(a)(2))	\$														
<input checked="" type="checkbox"/>	Three Months (37 CFR 1.17(a)(3))	\$950.00														
<input type="checkbox"/>	Four Months (37 CFR 1.17(a)(4))	\$														
<input type="checkbox"/>	Five Months (37 CFR 1.17(a)(5))	\$														
<p><input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. Therefore, the fee amount shown above is reduced by one-half, and the resulting fee is: \$475.00.</p> <p><input checked="" type="checkbox"/> A check in the amount of the fee is enclosed.</p> <p><input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any fees which may be required or to credit any overpayment to Deposit Account Number 13-2490. I have enclosed a duplicate copy of this sheet.</p>																
SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED																
Name	Emily Miao															
Reg. No.	35,285															
Signature																
Date	August 12, 2004															

EXT (Rev. 1/3/01)

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
(Case No. 00-714-G)

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Chad A. Mirkin, et al.)	Examiner: Robert D. Harlan
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Serial No. 09/830,620)	Group Art Unit: 1713
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Filed: November 30, 1999)	Confirmation No. 9430
)	
For: NANOPARTICLES WITH)	
POLYMER SHELLS)	

RESPONSE UNDER 37 C.F.R. 1.111

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is a response to the outstanding Office Action dated February 12, 2004. A Petition for an extension of time (three months) and requisite fee are attached herewith.

Please amend the application as shown below.

An "Amendment to the claims" section can be found on page 2.

A "Remarks" section can be found on page 10.

An Appendix A is attached.

Copies of an Information disclosure statement, 3rd Supp. IDS, 5th Supp. IDS, 12th Supp. IDS and 13th Supp. IDS are attached.

AMENDMENT TO THE CLAIMS

Please cancel claims 43 to 85, without prejudice or disclaimer, and amend the claims as shown below in the listing of the claims.

1. (Original) A method of preparing nanoparticles having at least one polymer shell attached thereto comprising:
 providing a type of nanoparticles; and
 attaching a type of initiation monomers to the surfaces of the nanoparticles.
2. (Original) The method of Claim 1 wherein the initiation monomer comprises a cyclic olefin-containing group.
3. (Original) The method of Claim 2 wherein the initiation monomer comprises a norbornenyl group.
4. (Original) The method of Claim 1 wherein the nanoparticles are gold nanoparticles.
5. (Original) The method of Claim 4 wherein the initiation monomer is a norbornenyl- containing alkanethiol.
6. (Original) The method of Claim 5 wherein the initiation monomer is 1-mercapto-10-(*exo*-5-norbornen-2-oxy)-decane.
7. (Original) The method of Claim 1 wherein the initiation monomers are mixed with a type of attachment compounds, and both the initiation monomers and the attachment compounds are attached to the surfaces of the nanoparticles.
8. (Currently amended) The method of Claim 1 further comprising:
 contacting the nanoparticles having the initiation monomers attached [to them] thereto with a transition metal ring-opening metathesis catalyst to activate the initiation monomers; and

contacting the nanoparticles with one or more types of propagation monomers of the formula P-L-N under conditions effective so that the propagation monomers are polymerized to form one or more polymer shells attached to the nanoparticles,

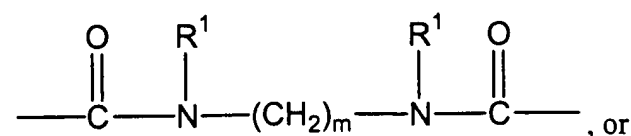
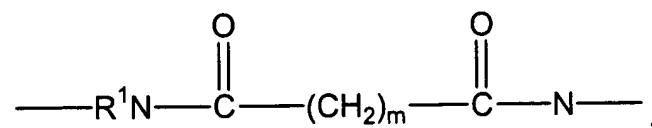
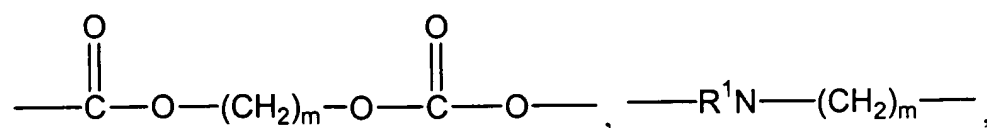
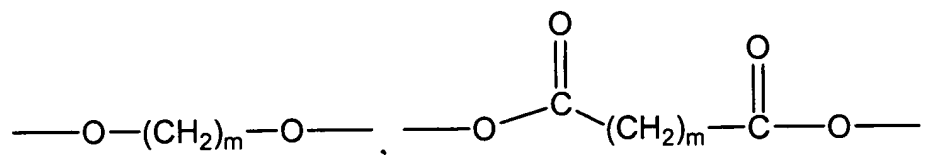
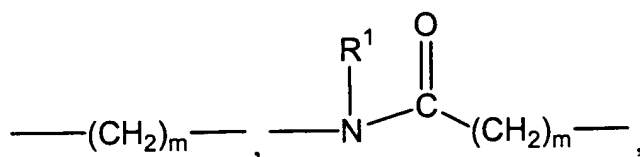
wherein:

N is a cyclic olefin-containing group;

P is a moiety which gives each polymer shell [a selected property or] one or more selected properties; and

L is a bond or linker whereby N is attached to P.

9. (Original) The method of Claim 8 wherein L is a polymer, ---COO--- ,
 $\text{---CH}_2(\text{CH}_2)_m\text{COO---}$, ---OCO--- ,
 $\text{---R}^1\text{N}(\text{CH}_2)_m\text{---NR}^1\text{---}$, $\text{---O}(\text{CH}_2)_m\text{---}$,



$\text{---}\overset{\text{O}}{\parallel}{\text{C}}\text{---}\overset{\text{R}^1}{\text{N}}\text{---}(\text{CH}_2)_m\text{---}$, or comprises a moiety B that binds specifically to an analyte;

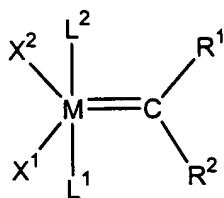
wherein:

R^1 has the formula $\text{X}(\text{CH}_2)_m$;

X is $-\text{CH}_3$, $-\text{CHCH}_3$, $-\text{COOH}$, $-\text{CO}_2(\text{CH}_2)_m\text{CH}_3$, $-\text{OH}$, $-\text{CH}_2\text{OH}$, ethylene glycol, hexa(ethylene glycol), $-\text{O}(\text{CH}_2)_m\text{CH}_3$, $-\text{NH}_2$, $-\text{NH}(\text{CH}_2)_m\text{NH}_2$, halogen, glucose, maltose, fullerene C60, a cyclic olefin, or a nucleic acid; and
 m is 0 – 30.

10. (Original) The method of Claim 8 wherein N is a norbornenyl-containing group.

11. (Original) The method of Claim 8 or 10 wherein the catalyst has the formula:



wherein:

M is osmium or ruthenium;

R¹ is hydrogen;

X¹ and X², which may be different or the same, are any anionic ligand;

L¹ and L², which may be different or the same, are any neutral electron donor;

and

R² is hydrogen, substituted or unsubstituted alkyl, or substituted or unsubstituted aryl.

12. (Original) The method of Claim 11 wherein M is ruthenium, R¹ is hydrogen, R² is phenyl, X¹ and X² are both $-\text{Cl}$, and L¹ and L² are both tricyclohexylphosphine.

13. (Currently amended) The method of Claim 8 or 10 wherein the catalyst has the formula:



wherein:

Re is rhenium (VII);

R¹ is selected from the group consisting of an alkyl having 1-20 carbon atoms, an aryl having 6-20 carbon atoms, an arralkyl having 7-30 carbon atoms, halogen substituted derivatives of [each] one of the alkyl, aryl, or arralkyl, and silicon-containing analogs of [each] one of the alkyl, aryl, or arralkyl;

R² is R¹ or is a substituent resulting from the reaction of the Re=CHR² moiety of the catalyst with an olefin that is being metathesized;

R³ and R⁴ are ligands which individually or together are sufficiently electron withdrawing to render the rhenium atom electrophilic enough for metathesis reaction; and

n is 1 or more.

14. (Original) The method of Claim 8 or 10 wherein the catalyst has the formula:



wherein:

M is molybdenum or tungsten;

R¹ and R² each individually may be an alkyl containing 1-20 carbon atoms, an aryl containing 6-20 carbon atoms, an arralkyl containing 7-20 carbon atoms, a halogen substituted derivative of the alkyl, aryl, or arralkyl, or a silicon-containing analog of one of the alkyl, aryl, or arralkyl; and

R³ is an alkyl containing 1-20 carbon atoms, an aryl containing 6-20 carbon atoms, an arralkyl containing 7-20 carbon atoms, or a substituent resulting from the reaction of the M=CHR³ moiety of said catalyst with an olefin being metathesized.

15. (Original) The method of Claim 8 or 10 wherein the nanoparticles are contacted with a single type of propagation monomers under conditions effective so that the monomers are polymerized to form a single polymer shell attached to the nanoparticles.

16. (Original) The method of Claim 15 wherein the polymer shell has redox activity.

17. (Original) The method of Claim 16 wherein the propagation monomer is *exo*-5-norbornen-2-yl ferrocenecarboxylate or *exo*-5-norbornen-2-yl ferroceneacetate.

18. (Original) The method of Claim 8 or 10 wherein:
the nanoparticles are contacted with a plurality of types of propagation monomers under conditions effective so that the monomers are polymerized to form one or more polymer shells attached to the nanoparticles, each polymer shell having one or more selected properties.
19. (Original) The method of Claim 18 wherein:
the nanoparticles are contacted with a first type of propagation monomers under conditions effective so that the monomers are polymerized to form a first polymer shell attached to the nanoparticles, the first polymer shell having a first selected property; and
then the nanoparticles are contacted with a second type of propagation monomers under conditions effective so that the monomers are polymerized to form a second polymer shell attached to the first polymer shell, the second polymer shell having a second selected property which is different from the first selected property of the first polymer shell.
20. (Original) The method of Claim 19 wherein one of the polymer shells has redox activity.
21. (Original) The method of Claim 20 wherein the propagation monomer polymerized to form the shell is *exo*-5-norbornen-2-yl ferrocenecarboxylate or *exo*-5-norbornen-2-yl ferroceneacetate.
22. (Original) The method of Claim 19 wherein the both polymer shells have redox activity.
23. (Original) The method of Claim 22 wherein the two polymer shells have different redox activities.
24. (Original) The method of Claim 23 wherein the propagation monomer polymerized to form the first polymer shell is *exo*-5-norbornen-2-yl ferrocenecarboxylate and the

propagation monomer polymerized to form the second polymer shell is *exo*-5-norbornen-2-yl ferroceneacetate.

25. (Original) The method of Claim 8 or 10 wherein the polymerization is stopped by adding a compound that terminates polymerization.

26. (Original) Nanoparticles having initiation monomers attached to them.

27. (Original) The nanoparticles of Claim 26 wherein the initiation monomers comprise cyclic olefin-containing groups.

28. (Original) The nanoparticles of Claim 27 wherein the initiation monomers comprise norbornenyl groups.

29. (Original) The nanoparticles of Claim 28 wherein the initiation monomers are norbornenyl-containing alkanethiols.

30. (Original) The nanoparticles of Claim 29 wherein the initiation monomers are 1-mercapto-10-(*exo*-5-norbornen-2-oxy)-decane.

31. (Original) Nanoparticles comprising one or more polymer shells attached to them, the polymer shells being formed by polymerizing one or more types of propagation monomers of the formula P-L-N,

wherein:

P is moiety which provides a desired property or properties to each of the polymer shells;

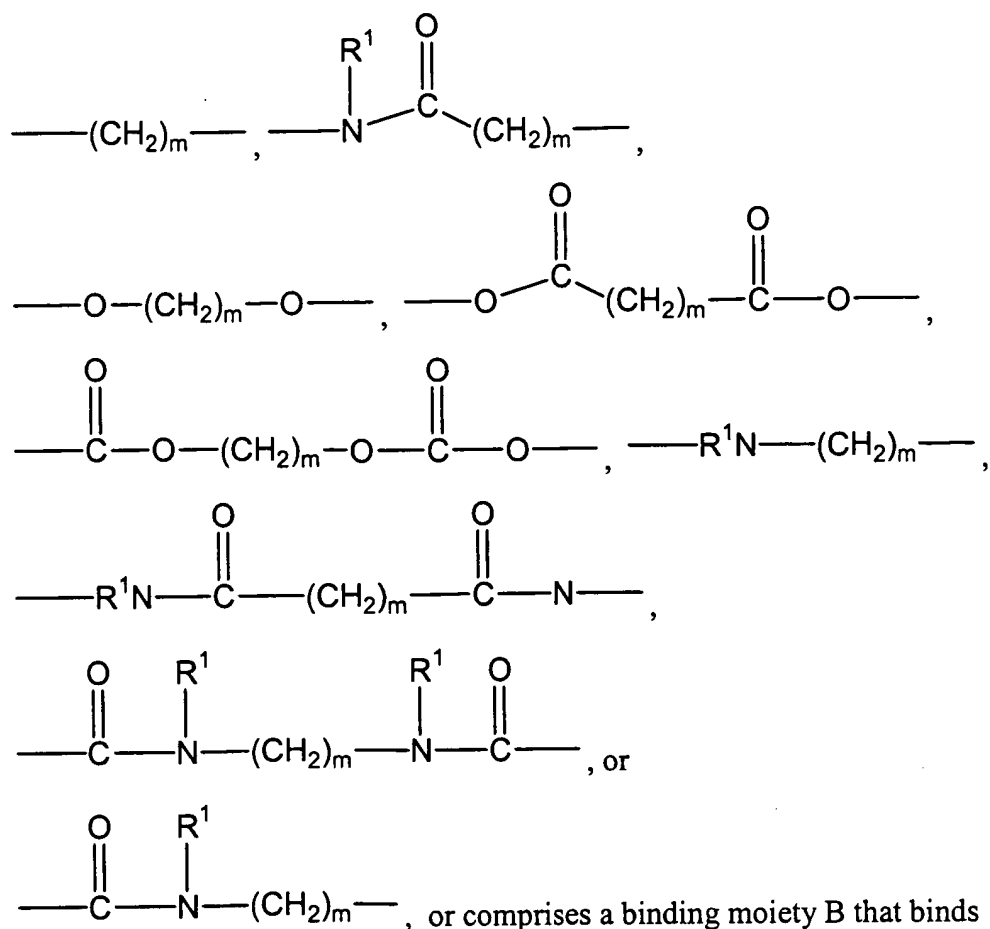
N is a cyclic olefin-containing group; and

L is a bond or a linker whereby N is attached to P.

32. (Currently amended) The nanoparticles of Claim 31 wherein L is a polymer,

—COO—, —CH₂(CH₂)_mCOO—, —OCO—,

—R¹N(CH₂)_m—NR¹—, —O(CH₂)_m—,



specifically to an ~~analyte~~ analyte,

wherein:

R¹ has the formula X(CH₂)_m;

X is -CH₃, -CHCH₃, -COOH, -CO₂(CH₂)_mCH₃, -OH, -CH₂OH, ethylene glycol, hexa(ethylene glycol), -O(CH₂)_mCH₃, -NH₂, -NH(CH₂)_mNH₂, halogen, glucose, maltose, fullerene C₆₀, a cyclic olefin, or a nucleic acid; and

m is 0 - 30.

33. (Original) The nanoparticles of Claim 31 wherein N is a norbornenyl-containing group.
34. (Original) The nanoparticles of Claim 31 or 33 having a single polymer shell attached to them.

35. (Original) The nanoparticles of Claim 31 or 33 having a plurality of polymer shells attached to them.
36. (Original) The nanoparticles of Claim 35 having two polymer shells attached to them, the first polymer shell and the second polymer shell having different properties.
37. (Original) The nanoparticles of Claim 34 wherein the polymer shell has redox activity.
38. (Original) The nanoparticles of Claim 35 wherein one of the polymer shells has redox activity.
39. (Original) The nanoparticles of Claim 36 wherein the first polymer shell has redox activity and the second polymer shell has redox activity different than that of the first polymer shell.
40. (Original) The nanoparticles of Claim 31, 32, or 33 wherein a polymer shell comprises a binding moiety B that binds specifically to an analyte.
41. (Original) The nanoparticles of Claim 40 wherein the polymer shell comprising the binding moiety B is formed by polymerizing one or more types of binding monomers of the formula N-L-B, wherein N, L, and B have the same meanings as in Claim 40.
42. (Original) The nanoparticles of Claim 41 wherein the polymer shell comprising the binding moiety B is formed by polymerizing a mixture of one or more types of binding monomers and one or more types of propagation monomers.
43. to 85. (Currently cancelled)

REMARKS

Reconsideration of this application, as amended, is respectfully requested.

Status of related applications

The Applicants wish to call the Examiner's attention to co-pending continuation-in-part application No. 10/125,194. At least two office action have already issued in that application. The Applicants also wish to call the Examiner's attention to other co-pending applications and issued patents that are related to nanoparticle compositions. One or more office actions have issued in most of these cases.

Status of Information disclosure statements

The Applicants have filed a total of fourteen (14) information disclosure statements and received copies of the Examiner's executed PTO 1449 forms for most of the disclosure statements except for the following: Information disclosure statement and 3rd, 5th, 12th, and 13th supplemental information disclosure statements. Copies of the aforementioned statements with the PTO 1449 forms are attached. Also attached are copies of the returned postcards bearing PTO stamped dates acknowledging receipt of the aforementioned documents with references. The Applicants request that the Examiner execute the included PTO 1449 forms and return a copy of the same to the undersigned representative. If the Examiner would like another copy of the cited references, the Applicants request that the Examiner contact the undersigned representative.

Status of the claims

Claims 1-85 were pending in this application and were subject to a four (4) way restriction. The Applicants elected Group I (claims 1-42). In order to expedite the prosecution of this application, the Applicants cancelled the non-elected claims (claims 43 to 84). Claims 8, 13, and 32 were amended to correct for grammatical or typographical errors. Support for the amendment of claim 13 can be found in claim 14. No new matter has been introduced into the application as a result of the present amendment.

Rejection under 35 U.S.C. section 112, second paragraph, for indefiniteness

Turning now to the Office action, the Examiner had objected to claims 2-6, 9-12, 14, 16, 17, 20-25, 27-30, 32, 33, and 36-40 but had indicated that these claims would be allowable if converted into independent claim format. The Examiner, however, rejected to claim 1, 7, 8, 15, 18, 19, 31, 41 and 42 for alleged indefiniteness under 35 U.S.C. section 112, second paragraph. Applicants respectfully traverse this rejection and submit that an ordinary skilled artisan would understand the meaning of the terms based on the teachings of the specification.

With respect to claim 1, the Examiner alleged that the term “nanoparticle” is open to many interpretations. Contrary to the Examiner’s position, the Applicants submit that an ordinary skilled artisan will understand what is meant by the term “nanoparticle” based on the teachings of the specification, for instance, on page 4, lines 27 to page 7, line 5.

Regarding claim 8, the Examiner alleged that the recitation “them” and “a selected property or properties” is indefinite. However, claim 8 has been amended and thus the Applicant submits that the section 112, second paragraph, rejection is moot.

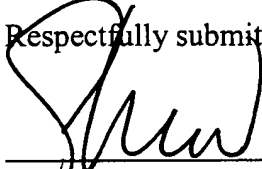
With respect to claim 13, the Examiner alleged that the recitation “each” and “silicon-containing analogs” are indefinite. However, claim 13 has been amended to conform the language to that of claim 14. Furthermore, an ordinary skilled artisan would understand the meaning of the phrase “silicon-containing analogs” (also in claim 14) based on the teachings of the specification, for instance, at page 15, lines 3-5 and page 15, line 28 to page 16, line 2.

Regarding claims 1, 7, 8, 15, 18, 19, 31, 41 and 42, the phrase “a type of” has been described in the specification, for instance, at page 22, line 27-31.

In light of the discussion above, the Applicant submits that the section 112, second paragraph, rejection is moot. The Applicants further submit that the claims are in allowable condition.

Reconsideration of this application is respectfully requested and a favorable determination is earnestly solicited. The Examiner is invited to contact the Applicants’ undersigned representative if the Examiner believes this would be helpful in expediting the prosecution of this application.

Dated: August 12, 2004

Respectfully submitted,


Emily Miao
Reg. No. 35,285

McDonnell Boehnen Hulbert & Berghoff LLP
300 South Wacker Drive, Suite 3200
Chicago, IL 60606
Tel. No. 312-913-0001
Fax No. 312-913-0002

APPENDIX A

ATTY Case No.	Serial No./ Filing Date	Inventors/Title	Status
00-653-G	U.S. 10/794,741 Filed 3/5/04	Mirkin, Letsinger, Mucic, Storhoff, Elghanian, Taton, Garamella, Li, Park/ NANOPARTICLES HAVING OLIGONUCLEOTI DES ATTACHED THERE TO AND USES THEREFORE	ALLOWED
00-713-B1	09/923,625 Filed 8/7/01	Mirkin, Letsinger, Mucic, Storhoff, Elghanian/ NANOPARTICLES HAVING OLIGONUCLEOTI DES ATTACHED THERE TO AND USES THEREFOR	ALLOWED
00-713-C	09/344,667, filed 6/25/99	Mirkin, Letsinger, Mucic, Storhoff, Elghanian/ NANOPARTICLES HAVING OLIGONUCLEOTI DES ATTACHED THERE TO AND USES THEREFORE	U.S. Patent No. 6,361,944, issued 3/26/02
00-713-I	U.S.S.N 09/603,830 Filed 6/26/00	Mirkin, Letsinger, Mucic, Storhoff, Elghanian, Taton; NANOPARTICLES HAVING OLIGONUCLEOTI DES ATTACHED THERE TO AND USES THEREFOR	U.S. Patent No. 6,506,564, issued 1/14/03
00-713-I-1	09/961,949 9/20/01	Mirkin, Letsinger, Mucic, Storhoff, Elghanian, Taton;	U.S. Patent No. 6,582,921, issued June 24, 2003

ATTY Case No.	Serial No./ Filing Date	Inventors/Title	Status
		NANOPARTICLES HAVING OLIGONUCLEOTI DES ATTACHED THERETO AND USES THEREFOR	
00-713-I-2	09/957,318 9/20/01	See 00-713-I-1	U.S. Patent No. 6,759,199, issued 7/6/04
00-713-I-3	09/957,313 9/20/01	See 00-713-I-1	U.S. Patent No. 6,645,721, issued 11/11/03
00-713-I-4	09/966,491 9/28/01	See 00-713-I-1	U.S. Patent No. 6,610,491, issued August 26, 2003
00-713-I-5	09/966,312 9/28/01	See 00-713-I-1	U.S. Patent No. 6,673,548, issued January 6, 2004
00-713-I-6	09/967,409 9/28/01	See 00-713-I-1	U.S. Patent No. 6,740,491, issued May 24, 2004
00-713-I-7	09/974,500 10/10/01	See 00-713-I-1	U.S. Patent No. 6,709,825, issued March 23, 2004
00-713-I-8	09/974,007 10/10/01	See 00-713-I-1	PENDING
00-713-I-9	09/973,638 10/10/01	See 00-713-I-1	ALLOWED
00-713-I-10	09/973,788 10/10/01	See 00-713-I-1	U.S. Patent No. 6,720,411, issued April 13, 2004
00-713-I-11	09/975,062 10/11/01	See 00-713-I-1	U.S. Patent No. 6,677,122, issued January 13, 2004
00-713-I-12	09/975,376 10/11/01	See 00-713-I-1	PENDING
00-713-I-13	09/975,384 10/11/01	See 00-713-I-1	PENDING

ATTY Case No.	Serial No./ Filing Date	Inventors/Title	Status
00-713-I-14	09/975,498 10/11/01	See 00-713-I-1	ALLOWED
00-713-I-15	09/975,059 11/11/01	See 00-713-I-1	ALLOWED
00-713-I-16	09/976,601 10/12/01	See 00-713-I-1	PENDING
00-713-I-17	09/976,968 10/12/01	See 00-713-I-1	ALLOWED
00-713-I-18	09/976,971 10/12/01	See 00-713-I-1	U.S. Patent No. 6,682,895, issued 1/27/04
00-713-I-19	09/976,863 10/12/01	See 00-713-I-1	PENDING
00-713-I-20	09/976,577 10/12/01	See 00-713-I-1	U.S. Patent No. 6,720,147, issued April 13, 2004
00-713-I-21	09/976,618 10/12/01	See 00-713-I-1	ALLOWED
00-713-I-22	09/981,344 10/15/01	See 00-713-I-1	U.S. Patent No. 6,777,186, issued August 17, 2004
00-713-I-23	09/976,900 10/12/01	See 00-713-I-1	PENDING
00-713-I-24	09/976,617 10/12/01	See 00-713-I-1	U.S. Patent No. 6,730,269, filed May 4, 2004
00-713-I-25	09/976,378 10/12/01	See 00-713-I-1	PENDING
00-713-i-26	10/410,324 04/10/03	See 00-713-I-1	PENDING
00-713-L	U.S.S.N. 09/693,005 Filed 10/20/00	Mirkin, Letsinger, Mucic, Storhoff, Elghanian/	U.S. Patent No. 6,495,324, issued 12/17/02

ATTY Case No.	Serial No./ Filing Date	Inventors/Title	Status
		NANOPARTICLES HAVING OLIGONUCLEOTI DES ATTACHED THERETO AND USES THEREFORE	
00-713-M	U.S.S.N. 09/693,352 Filed 10/20/00	Mirkin, Letsinger, Mucic, Storhoff, Elghanian/ NANOPARTICLES HAVING OLIGONUCLEOTI DES ATTACHED THERETO AND USES THEREFORE	U.S. Patent No. 6,417,340, issued 7/9/02
00-714-G	U.S. 09/830,620 Filed 8/15/01	Mirkin, Nguyen/ NANOPARTICLES WITH POLYMER SHELLS	PENDING
00-715-A	U.S. 09/760,500 Filed 1/12/01	Mirkin, Letsinger, Mucic, Storhoff, Elghanian, Taton; Garamella, Li/ METHOD OF ATTACHING OLIGONUCLEOTI DES TO NANOPARTICLES AND PRODUCTS PRODUCED THEREBY	U.S. Patent No. 6,767,702, issued July 27, 2004
00-715-B	U.S. 10/716,829 Filed 11/18/03	Mirkin, Letsinger, Mucic, Storhoff, Elghanian, Taton; Garamella, Li/ METHOD OF ATTACHING OLIGONUCLEOTI DES TO NANOPARTICLES AND PRODUCTS PRODUCED THEREBY	Pending
00-1085-A	U.S.S.N.	Mirkin, Letsinger,	U.S. Patent No.

ATTY Case No.	Serial No./ Filing Date	Inventors/Title	Status
	09/820,279 Filed 3/28/01	etc./ METHOD AND MATERIALS FOR ASSAYING BIOLOGICAL MATERIALS	6,750,016, issued June 15, 2004
00-1085-G	U.S.S.N. 10/640,618 Filed 8/13/03	Mirkin,Letsinger, etc./ METHOD AND MATERIALS FOR ASSAYING BIOLOGICAL MATERIALS	Pending
00-1086-A	U.S. 09/903,461 Filed 7/11/01	Letsinger, Garimella/ METHOD OF DETECTION BY ENHANCEMENT OF SILVER STAINING	U.S. Patent No. 6,602,669, Filed 8/5/03
00-1272-C	U.S.S.N. 10/008,978 Filed 12/7/01	Mirkin, Letsinger, Mucic, Storhoff, Elghanian, Taton, Garimella, Li, Park, Lu/ NANOPARTICLES HAVING OLIGONUCLEOTI DES ATTACHED THERETO AND USES THEREOF	PENDING
01-565-A	USSN 10/125,194 Filed 4/18/02	Mirkin, Nguygen, Watson, Park/ OLIGONUCLEOTI DE-MODIFIED ROMP POLYMERS AND CO- POLYMERS	PENDING
01-599-A	U.S.S.N. 10/291,291 Filed 11/08/02	Storhoff/NOVEL THIOL-BASED METHOD FOR ATTACHING OLIGONUCLEOTI DES TO NANOPARTICLES	PENDING
01-661-A	U.S.S.N. 10/034,451	Mirkin, Cao, Jin/ DNA-MODIFIED	PENDING

ATTY Case No.	Serial No./ Filing Date	Inventors/Title	Status
	Filed 12/28/01	CORE-SHELL AG/AU NANOCRYSTALS	
01-661-C	U.S.S.N. 10/153,483 Filed 5/22/02	Mirkin, Cao, Jin/ DNA-MODIFIED CORE-SHELL AG/AU NANOCRYSTALS	PENDING
01-661-E	U.S.S.N. 10/397,579 3/26/03	Mirkin, Cao, Jin/ DNA-MODIFIED CORE-SHELL AG/AU NANOCRYSTALS	PENDING
01-1565-A	U.S.S.N. 10/266,983 Filed 10/08/02	Park, Taton, Mirkin/ARRAY- BASED ELECTRICAL DETECTION OF DNA USING NANOPARTICLE PROBES	PENDING
01-1633-A	U.S.S.N. 10/266,983 Filed 10/8/02	Park, Taton, Mirkin/NANOPARI CLES HAVING OLIGONUCLEOTI DES ATTACHED THERETO AND USES THEREFOR	PENDING
01-1705-A	U.S.S.N. 10/108,211 Filed 3/27/02	Nam, Park, Mirkin/BIO- BARCODES BASED ON OLIGONUCLEOTI DE-MODIFIED NANOPARTICLES	PENDING
02-338-B	USSN 10/172,428 Filed 6/14/02	Cao, Jin, Nam, Mirkin/MULTI CHANNEL DETECTION USING NANOPARTICLE PROBES WITH RAMAN SPECTROSCOPIC FINGERPRINTS	PENDING

ATTY Case No.	Serial No./ Filing Date	Inventors/Title	Status
02-338-C	10/431,341 5/7/03	Cao, Jin, Nam, Mirkin/MULTI- CHANNEL DETECTION USING NANOPARTICLE PROBES WITH RAMAN SPECTROSCOPIC FINGERPRINTS	PENDING
02-1227-A	10/735,357 Filed 12/12/03	DIRECT SNP DETECTION WITH UNAMPLIFIED NUCLEIC ACID USING NANOPARTICLE PROBES	PENDING
03-214-A	10/789,831 Filed 2/27/04	LABEL-FREE GENE EXPRESSION PROFILING WITH UNIVERSAL NANOPARTICLE PROBES IN MICROARRAY ASSAY FORMAT	PENDING
03-466-C	10/854,848 Filed 5/27/04	METHOD FOR DETECTING ANALYTES BASED ON EVANESCENT ILLUMINATION AND SCATTER- BASED DETECTION OF NANOPARTICLE PROBE COMPLEXES	PENDING
03-666-E	10/877,750 Filed 6/25/04	BIOBARCODE	PENDING

EXHIBIT - B

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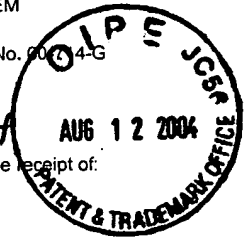
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S/N— 09/830,620
Re: Applicant - Mirkin, et al.

Atty: EM

Case No. 09-4-G

NANOPARTICLES WITH POLYMER SHELLS

Date Mailed: Aug 12, 2004



Sir:

Please place the Patent Office receipt stamp hereon and mail to acknowledge receipt of:

- Transmittal Letter
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- Appendix A
- Copies of Information Disclosure Statement, Transmittal, 1449 Form, PTO stamped Return Receipt Postcard, Third Supp. IDS, Transmittal, 1449 Form, PTO stamped Return Receipt Postcard, Fifth Supp. IDS, Transmittal, 1449 Form, PTO stamped Return Receipt Postcard, Twelfth Supp. IDS, Transmittal, 1449 Form, PTO stamped Return Receipt Postcard, Thirteenth Supp. IDS, Transmittal, 1449 Form, PTO stamped Return Receipt Postcard
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Respectfully,
McDonnell Boehnen Hulbert & Berghoff LLP
Attorney for Applicant